

Remarks

Claims 1-25 are pending in this application, after entry of this Preliminary Amendment. By this Preliminary Amendment, Claims 7, 17, 22 and 25 are amended to more particularly point out and distinctly claim the invention. Applicants previously elected Claims 7-12, 17-21 and 23 in response to an Election of Species Requirement. Claim 25 is addressed to the same elected species and should also be considered by the Examiner.

Claim Rejections

In the October 9, 2007 Final Office Action, the Examiner rejected Claims 7 and 17 as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 5,209,233 ("the '233 Patent"). The Examiner also rejected Claims 7, 8, 10, 11, 17, 18 and 20 as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,148,229 ("the '229 Patent"). In addition, the Examiner rejected Claims 21, 23 and 25 as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 5,879,308 ("the '308 Patent"). Finally, the Examiner rejected dependent Claims 9 and 19 as obvious under 35 U.S.C. § 103 over the '229 Patent in view of U.S. Patent No. 5,327,888 ("the '888 Patent") and dependent Claim 12 as obvious under 35 U.S.C. § 103 over the '229 Patent in view of U.S. Patent No. 5,193,108 ("the '108 Patent").

After entry of this Amendment, each of the pending independent claims currently being examined (i.e., Claim 7, 17, 21 and 25) requires that a signal be generated representative of movement of an exterior portion of a patient's body while that patient is positioned within a magnetic field and that this signal be generated by electromagnetic induction (i.e., by movement of a loop of wire, such as an EGG lead, within a magnetic field). As discussed below, none of the cited references discloses the generation of a signal representative of motion of an exterior portion of a patient's body, when the patient is positioned within a magnetic field, where this signal is produced by electromagnetic induction.

The '233 Patent discloses a system (Fig. 2) which generates an electrocardiogram signal using EKG leads 56 and separately a respiration signal using an air-filled elastomeric belt 90 connected to a pressure sensor 94 to measure changes in air pressure caused by the patient's breathing. The '233 Patent does not disclose that a signal representative of motion of the body is generated by electromagnetic induction.

The '229 Patent, which shares a common inventor with the instant application, discloses a system and method for compensating for motion artifacts during an MRI examination but, like the '233 Patent, does not disclose that a signal representative of the motion of the patient's body is measured by electromagnetic induction. Instead, the system disclosed in the '229 Patent modulates the magnetic field applied during the MRI examination to ensure that an accurate electrocardiogram signal is generated after processing of the measured signals. Like the '233 Patent, the '229 Patent uses the EKG leads only to provide an electrocardiogram signal.

Although the '308 Patent does disclose a system which uses EKG leads to measure electrocardiogram and respiration, it does not disclose making this measurement when a patient is in a magnetic field and therefore measures respiration in a very different way from that disclosed and claimed in the instant application. In particular, the system of the '308 Patent measures respiration by detecting changes in the impedance of the patient. According to the '308 Patent, the electrical conductivity of a patient's chest cavity changes from inhalation to exhalation ('308 Patent, Col. 1, lines 12-25). Specifically, the '308 Patent system measures respiration by inserting a signal from signal generator 5 at electrode 1a and a signal equal in magnitude but opposite in phase (from inverter 6) at electrode 1b, and measuring the voltage detected at electrode 2. ('308 Patent, Figs. 1-2, Col. 4, lines 9-49). Gain control circuit 7 is used to adjust the signal applied to electrode 1b so that the voltage generated at electrode 2 is zero when no respiration is occurring and non-zero during respiration (due to the changing impedance of the patient's chest). (Id.). However, the '308 Patent does not teach or suggest measuring respiration in a magnetic

field or generating a signal representative of motion of the patient's body within a magnetic field that is induced by the movement of a wire within the magnetic field.

Furthermore, the '888 Patent and the '108 Patent likewise do not disclose that the motion of a body (or portion of a body) be measured by electromagnetic induction. In particular, the cited '888 Patent is addressed to a precordial electrode strip which includes a group of electrodes and which is used to position the group of ECG electrodes on the torso of a patient (instead of having to separately position each of the ECG electrodes within the group). The '888 Patent does not disclose that any of the ECG electrodes and the related leads are used to measure motion of an exterior portion of the body of the patient or for the dual purpose of generating an electrocardiogram signal and a signal representative of body motion. The cited '108 Patent is addressed to a telecommunications test instrument, and does not include any disclosure or teaching related to a device which generates an electrocardiogram signal or a signal representative of body motion.

Since none of the cited prior art, alone or in any combination thereof, discloses a system or method which measures the motion of an exterior portion of the body of a patient by use of electromagnetic induction, none of the cited prior art, alone or in any combination thereof, anticipates or renders obvious any of Claims 7-12, 17-21, 23 and 25. As a result, Applicants respectfully request that the Examiner withdraw the rejections of Claims 7-12, 17-21 and 23.

Furthermore, since Applicants assert that linking Claim 21 is patentable, Applicants request consideration of non-elected Claims 1-6, 13-16, 22 and 24.

Conclusions

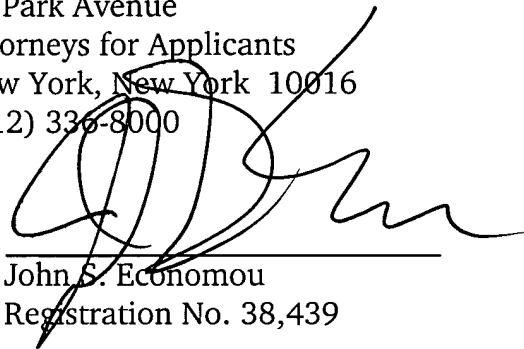
For all the reasons discussed above, Applicants respectfully submit that the present application is in condition for allowance, and request the allowance of Claims

7-12, 17-21, 23 and 25. No fees, other than the fees related to filing the associated Request for Continued Prosecution, are deemed necessary for the filing of this Preliminary Amendment. However, if any additional fees are required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 01-1785.

Respectfully submitted,

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